

What is claimed is:

1. A semiconductor device comprising:
a plurality of wiring lines which are formed of Cu whose concentration is equal to or higher than 10^{19} atoms/cm³; and
an insulating layer which has a property that Cu is unlikely to enter said insulating
5 layer and which insulates between said plurality of wiring lines.
2. The semiconductor device according to claim 1, wherein said insulating layer includes an HSQ layer which is formed of HSQ (Hydrogen Silsesquioxane).
3. The semiconductor device according to claim 2, further comprising adhesion layers, which are formed respectively between one of said plurality of wiring lines and said insulating layer and between one of said plurality of wiring lines and said insulating layer, and which allow said plurality of wiring lines and said insulating layer to adhere to
5 one another through said adhesion layers.
4. The semiconductor device according to claim 3, wherein said adhesion layer has an etching rate which is equivalent to an etching rate of said plurality of wiring lines.
5. The semiconductor device according to claim 4, wherein said adhesion layer is formed of tungsten.
6. A method of manufacturing a semiconductor device, comprising:
forming, on a first wiring line formed of Cu, a first insulating layer having a property that Cu is unlikely to enter the first insulating layer;
forming a first hole in the first insulating layer, and filling the first hole with Cu,
5 thereby to form a plug connected to the first wiring line;
forming, on the first insulating layer, a second insulating layer having a property that Cu is unlikely to enter the second insulating layer; and
forming a second hole in the second insulating layer, and filling the second hole with Cu, thereby to form a second wiring line connected to the plug.
7. The method of manufacturing a semiconductor device according to claim 6,

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wherein:

said forming the first insulating layer includes forming the first insulating layer using HSQ (Hydrogen Silsesquioxane); and

5 said forming the second insulating layer includes forming the second insulating layer using HSQ.

8. The method of manufacturing a semiconductor device according to claim 7, wherein said forming the plug includes:

forming, on an inner surface of the first hole, an adhesion layer which allows the first insulating layer and the plug to adhere to each other; and

5 filling an inside of the adhesion layer with Cu.

9. The method of manufacturing a semiconductor device according to claim 8, wherein said forming the adhesion layer includes forming the adhesion layer using a material having an etching rate which is equivalent to an etching rate of Cu.

10. The method of manufacturing a semiconductor device according to claim 9, wherein said forming the adhesion layer includes forming the adhesion layer using tungsten.

11. The method of manufacturing a semiconductor device according to claim 7, wherein said forming the second wiring line includes:

forming, on an inner surface of the second hole, an adhesion layer which allows the second insulating layer and the second wiring line to adhere to each other; and

5 filling an inside of the adhesion layer with Cu.

12. The method of manufacturing a semiconductor device according to claim 11, wherein said forming the adhesion layer includes forming the adhesion layer using a material having an etching rate which is equivalent to an etching rate of Cu.

13. The method of manufacturing a semiconductor device according to claim 12, wherein said forming the adhesion layer includes forming the adhesion layer using tungsten.

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